

What is claimed is:

1. An implantable lead assembly comprising:
a lead body extending from a proximal end to a distal end having an
5 intermediate portion therebetween, wherein the lead body includes an insulating
layer;
a conductor disposed within the insulating layer, wherein the insulating layer
surrounds the conductor;
an electrode coupled to the lead body, wherein the electrode is in electrical
10 communication with the conductor; and
at least one magnetic jacket disposed within the insulating layer, wherein the
at least one magnetic jacket surrounds the conductor.
2. The implantable lead assembly of claim 1, wherein the at least one magnetic
15 jacket is disposed adjacent to the conductor.
3. The implantable lead assembly of claim 2, wherein the at least one magnetic
jacket is electrically nonconductive.
- 20 4. The implantable lead assembly of claim 2, wherein the conductor includes a
second insulating layer comprising the outer surface of the conductor, the second
insulating layer electrically isolates the conductor from the at least one magnetic
jacket.

5. The implantable lead assembly of claim 1, wherein the insulating layer includes a first portion and a second portion, the first portion surrounds the conductor, the second portion surrounds the first portion, and the at least one magnetic jacket is interposed between the first portion and the second portion.
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6. The implantable lead assembly of claim 1, wherein the at least one magnetic jacket includes a substrate and magnetic particles, and the magnetic particles are disposed within the substrate.
- 10 7. The implantable lead assembly of claim 1, wherein the at least one magnetic jacket is coextensive with the insulating layer, the at least one magnetic jacket includes interstitial magnetic particles, and the interstitial magnetic particles are disposed within the insulating layer.
- 15 8. The implantable lead assembly of claim 7, wherein the interstitial magnetic particles are disposed throughout the insulating layer.
9. The implantable lead assembly of claim 1, wherein a second conductor is disposed within the insulating layer, and the insulating layer surrounds the second
- 20 conductor.
10. The implantable lead assembly of claim 9, wherein the at least one magnetic jacket surrounds the second conductor.
- 25 11. The implantable lead assembly of claim 9, wherein a second magnetic jacket is disposed within the insulating layer, and the second magnetic jacket surrounds the second conductor.

12. An implantable lead assembly comprising:
a lead body extending from a proximal end to a distal end having an intermediate portion therebetween, wherein the lead body includes an insulating layer;
- 5 a conductor disposed within the insulating layer, wherein the insulating layer surrounds the conductor, the conductor has a first inductance value;
at least one magnetic jacket disposed within the insulating layer, wherein the at least one magnetic jacket has a second inductance value; and
an electrode coupled to the lead body, wherein the electrode is in electrical
- 10 communication with the conductor.
13. The implantable lead assembly of claim 12, wherein the at least one magnetic jacket surrounds the conductor.
- 15 14. The implantable lead assembly of claim 12, wherein the conductor and at least one magnetic jacket have a combined third inductance value, and the third inductance value is greater than the first inductance value.
- 20 15. The implantable lead assembly of claim 12, wherein the at least one magnetic jacket includes a substrate and magnetic particles, and the magnetic particles are disposed within the substrate.
16. An implantable lead assembly comprising:
a lead body extending from a proximal end to a distal end having an intermediate portion therebetween, wherein the lead body includes an insulating layer;
- 25 a conductor disposed within the insulating layer, wherein the insulating layer surrounds the conductor;

an electrode coupled to the lead body, wherein the electrode is in electrical communication with the conductor; and

means for isolating the conductor from electromagnetic interference.

5 17. The implantable lead assembly of claim 16, wherein the means for isolating the conductor from electromagnetic interference includes a magnetic jacket disposed within the insulating layer, the magnetic jacket surrounds the conductor.

18. The implantable lead assembly of claim 17, wherein the magnetic jacket is
10 electrically isolated from the conductor by a second insulating layer, the second insulating layer surrounds the conductor.

19. The implantable lead assembly of claim 17, wherein the magnetic jacket includes a substrate and magnetic particles, and the magnetic particles are disposed
15 within the substrate.

20. A method comprising:
 increasing the inductance of an implantable lead assembly with the inductance of a magnetic jacket, the implantable lead assembly including a lead body
20 extending from a proximal end to a distal end, the lead body includes an insulating layer and a conductor disposed within the insulating layer, an electrode is coupled to the lead body and in electrical communication with the conductor, the insulating layer surrounds the conductor, and the magnetic jacket is disposed within the insulating layer and the magnetic jacket surrounds the conductor;

25 exposing a pulse generator and the implantable lead assembly coupled thereto to electromagnetic interference; and

 isolating the pulse generator and the implantable lead assembly from electromagnetic interference.

21. The method of claim 20, wherein increasing the inductance of the implantable lead assembly further includes adding the inductance of the magnetic jacket with an inductance of the conductor.
- 5 22. The method of claim 20, wherein isolating the pulse generator and the implantable lead assembly further includes decreasing an antenna efficiency of the implantable lead assembly.
23. The method of claim 20, wherein isolating the pulse generator and the
10 implantable lead assembly further includes decreasing interpretation of electromagnetic interference as cardiac activity.